

FILTER FACILITY HAVING FLOW FACILITATING STRUCTURE

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a filter facility, and more
5 particularly to a filter facility having a structure for allowing fluid
to be effectively flown through the filter facility, and for increasing
working life of the filter facility.

2. Description of the Prior Art

Typical air conditioning systems or facilities comprise a tube
10 system for receiving fluid therein, such as coolant or cooling agent
therein, a compressor for pumping the fluid through the tube system,
and one or more filter facilities coupled in the tube system, to
receive and to filter the fluid.

Normally, the typical filter facilities comprise one or more
15 filter clothes or screens disposed in a container or the like, to filter
the fluid.

However, particles or dirt contained in the fluid may be filtered
and retained in the clothes or screens of the filter facilities, and may
easily or quickly block the clothes or screens of the filter facilities.
20 The fluid may not effectively flow through the clothes or screens of
the filter facilities when the clothes or screens of the filter facilities
have been blocked by the particles or dirt.

In addition, when the clothes or screens of the filter facilities
have been blocked by the particles or dirt, the flowing speed and
25 flowing quantity of the fluid through the tube system and/or the
compressor may be decreased, and may thus damage the whole air
conditioning systems or facilities.

The present invention has arisen to mitigate and/or obviate the afore-described disadvantages of the conventional filter facilities.

SUMMARY OF THE INVENTION

The primary objective of the present invention is to provide a
5 filter facility including a structure for allowing the fluid to be
effectively flown through the filter facility, and for increasing the
working life of the filter facility.

In accordance with one aspect of the invention, there is
provided a filter facility comprising a container including a chamber
10 formed therein to receive a fluid, a filter device received in the
chamber of the container, to separate the chamber of the container
into a first space and a second space, the container including an
inlet communicating with the first space of the container, to allow
the fluid to flow into the first space of the container and then to flow
15 through the filter device, and the container including an outlet
communicating with the second space of the container, to allow the
fluid flowing through the filter device to flow out through the
second space and the outlet of the container, the filter device
including a housing having a bottom panel received in the chamber
20 of the container, and having an outer peripheral wall extended
upwardly from the bottom panel, to form a chamber in the housing,
and a plurality of filter particles received within the chamber of the
housing, for filtering the fluid. The housing includes a peripheral
partition extended upwardly from the bottom panel thereof, and
25 extended into the chamber of the housing, and includes a plate
provided on top of the peripheral partition, to form a compartment
within the peripheral partition and the plate, and to form a

peripheral space between the peripheral partition and the peripheral wall of the housing. The housing includes a plurality of apertures formed in the peripheral wall and the peripheral partition and the plate, and communicating with the chamber and the compartment
5 and the peripheral space of the housing, to increase a flowing area of the fluid through the housing.

The filter device further includes a filter member disposed below the bottom panel, and disposed between the housing and the second space of the container, to filter the fluid. The filter device
10 further includes a casing disposed below the filter member, and disposed between the filter member and the second space of the container, the casing includes a plurality of orifices formed therein to allow the fluid to flow through the filter member and the orifices of the container. The casing includes an outer peripheral fence
15 extended upwardly therefrom to form a space therein, and to receive the filter member in the space of the casing.

The container includes a reduced base provided in bottom thereof, to form an inner peripheral shoulder therein, and to seat and retain the filter device within the chamber of the container.

20 The filter device further includes another filter member disposed on the filter particles, to filter the fluid before the fluid flowing through the filter particles. The filter device further includes a filter screen disposed on the other filter member, to filter the fluid before the fluid flowing through the other filter member.

25 A spring biasing device may further be provided for biasing the filter screen against the filter member and the filter particles. The filter screen includes an outer peripheral flange extended therefrom

and slidably engage with the peripheral wall of the housing, to guide the filter screen to move up and down relative to the housing.

Further objectives and advantages of the present invention will become apparent from a careful reading of the detailed description provided hereinbelow, with appropriate reference to the
5 accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an exploded view of a filter facility in accordance with the present invention;

10 FIG. 2 is a cross sectional view of the filter facility, illustrating the operation of the filter facility; and

FIG. 3 is a cross sectional view similar to FIG. 2, illustrating the other arrangement of the filter facility.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

15 Referring to the drawings, and initially to FIGS. 1 and 2, a filter facility in accordance with the present invention comprises a container 20 including a chamber 21 formed therein for receiving a fluid 22, such as a coolant or cooling agent 22 (FIGS. 2, 3), and including an inlet 23 and an outlet 24 formed therein and each
20 defined by a conduit 25, and communicating with the chamber 21 of the container 20 for allowing the fluid 22 to flow into and to flow out the chamber 21 of the container 20.

A filter device 3 is to be disposed in the container 20, such as disposed in the middle portion of the container 20, in order to
25 separate the chamber 21 of the container 20 into two spaced spaces 26, 27 which are communicating with the inlet 23 and the outlet 24 of the container 20 respectively, for allowing the fluid 22 to flow

from the inlet 23 and the space 26 of the container 20, and to flow through the filter device 3, and then to flow out through the space 27 and the outlet 24 of the container 20.

The container 20 preferably includes a frustum-shaped or reduced base 28 formed or provided in the bottom portion thereof, to form or define an inner peripheral shoulder 29 therein, and to seat or support or retain the filter device 3 within the container 20. The conduits 25 of the container 20 may be connected to hoses 80 for allowing the fluid 22 to flow through the filter facility through or via the hoses 80.

The filter device 3 includes a casing 30 rested or seated or secured on the inner peripheral shoulder 29 of the container 20, and having a peripheral fence 31 extended upwardly from the outer peripheral portion thereof, to form or define a space 32 therein, and to receive a filter cloth or member 33 in the space 32 of the casing 30. The casing 30 includes a number of orifices 34 formed therein and communicating with the space 32 thereof, for allowing the fluid 22 to flow through the filter member 33 and the orifices 24 of the container 20.

A housing 40 includes a bottom panel 41 received in the chamber 21 of the container 20, and engaged or seated on the filter member 33, a peripheral wall 42 extended upwardly from the outer peripheral portion thereof, to form or define a chamber 43 therein, and to receive a number of filter particles 70 within the chamber 43 of the housing 40. The filter member 33 is thus disposed between the housing 40 and the space 27 of the container 20.

The housing 40 includes a peripheral partition 44 extended

upwardly from the bottom panel 41 thereof, and extended into the chamber 43 of the housing 40, and includes a plate 45 provided on top of the peripheral partition 44, to form or define a compartment 46 within the peripheral partition 44 and the plate 45, and to form or
5 define a peripheral space 47 between the peripheral partition 44 and the peripheral wall 42 of the housing 40.

The housing 40 includes a number of apertures 48 formed in the peripheral wall 42 and/or the bottom panel 41 and/or the peripheral partition 44 and/or the plate 45, and communicating with
10 the chamber 43 and/or the compartment 46 and/or the peripheral space 47 of the housing 40, for allowing the fluid 22 to flow through the peripheral wall 42 and/or the bottom panel 41 and/or the peripheral partition 44 and/or the plate 45 of the housing 40.

As best shown in FIGS. 2 and 3, the peripheral wall 42 of the
15 housing 40 is engaged in the peripheral fence 31 of the casing 30, such that a peripheral channel 49 may be formed or defined between the peripheral wall 42 of the housing 40 and the container 20, for allowing the fluid 22 to flow through the peripheral wall 42 and then flow into the chamber 43 of the housing 40.

20 Another filter cloth or member 50 may further be provided and received within the chamber 43 of the housing 40, and disposed or engaged on top of the filter particles 70, to further filter the fluid 22 before the fluid 22 flows through the filter particles 70. A filter screen 51 may further be provided and received within the chamber
25 43 of the housing 40, and disposed or engaged on top of the filter cloth or member 50, to further filter the fluid 22. A spring member 55 may further be provided and engaged between the container 20

and the filter screen 51, to bias the filter screen 51 and the filter cloth or member 50 against the filter particles 70.

The filter screen 51 may include a number of holes 53 formed therein to allow the fluid 22 to flow through the screen 51. The
5 screen 51 may further include a peripheral flange 54 extended upwardly from the outer peripheral portion thereof, to engage with the peripheral wall 42 of the housing 40, and to guide the screen 51 to smoothly move up and down relative to the housing 40.

In operation, as shown in FIG. 2, the fluid 22 from the hose 80
10 and the inlet 23 of the container 20 may flow through the filter particles 70 via either the screen 51 and the filter cloth or member 50, or the peripheral wall 42 of the housing 40; and may then flow through the bottom panel 41 or the peripheral partition 44 or the plate 45 before flowing through the filter cloth or member 33 and
15 the casing 30 of the filter device 3.

It is to be noted that the formation or the provision of the peripheral partition 44 and the plate 45 within the chamber 43 of the housing 40 may increase the contact areas between the housing 40 and the filter particles 70, or may increase the flowing areas of the
20 fluid 22 through the housing 40.

Referring next to FIG. 3, the inlet 23 and the outlet 24 of the container 20 may also be simultaneously provided on top of the container 20, and the container 20 may include a pipe 81 coupled to the inlet 23 of the container 20 and engaged into the space 26 of the
25 container 20, and may include another pipe 83 coupled to the outlet 24 of the container 20 and engaged through the filter device 3 and engaged into the other space 27 of the container 20.

Accordingly, the filter facility in accordance with the present invention includes a structure for allowing the fluid to be effectively flown through the filter facility, and for increasing the working life of the filter facility.

5 Although this invention has been described with a certain degree of particularity, it is to be understood that the present disclosure has been made by way of example only and that numerous changes in the detailed construction and the combination and arrangement of parts may be resorted to without departing from
10 the spirit and scope of the invention as hereinafter claimed.